

What is claimed is:

1. An image display device, comprising:
  - a plurality of light-emitting diodes arranged
  - 5 by a predetermined arrangement on an image display face;
  - a voltage detection portion for applying a constant current to said plurality of light-emitting diodes in an off region at a forward voltage or less in accordance with an input of a signal indicating a defect
  - 10 detection mode, and detecting a voltage between terminals of a light emitting diode arising when the constant current flows there through; and
  - a defect detection portion for electrically detecting a defect from said plurality of light-emitting diodes based on a detection result of said voltage
  - 15 detection portion.

2. An image display device as set forth in claim 1, wherein:
  - 20 said voltage detection portion is provided to each of a plurality of drive circuits connected in series in one direction for respectively driving a predetermined number of said light-emitting diodes; and
  - said defect detection portion transfers data
  - 25 indicating said voltages between terminals of said light-

emitting diodes serially between a plurality of drive circuits in each line of said drive circuits in the horizontal direction, and based on data output from a drive circuit on the final stage being added with  
5 information of the voltages between terminals every time it transfers between the drive circuits, detects said defect in every said line in the horizontal direction.

3. An image display device as set forth in claim  
10 2, wherein:

said voltage detection portion comprises  
a current source connected in series  
with said light-emitting diodes; and  
a comparator for comparing a voltage of  
15 one terminal of a light-emitting diode changing in  
proportional to said voltage between terminals as a  
result that said constant current flows to said current  
source with an input reference voltage;

wherein said defect detection portion repeats  
20 said defect detection on a line in the horizontal  
direction of said drive circuit for a plurality of times  
while changing said reference voltage by steps.

4. An image display device as set forth in claim  
25 3, wherein said defect detection portion comprises

a logic calculation unit for executing logic calculation on an output of said comparator corresponding to said predetermined number of light-emitting diodes and outputting a result of the logic calculation as binary

5 data indicating an existence of a particularity with a probability of being said defect; and

a transfer register for adding said binary data output from said logic calculation unit to data input from a defect detection portion on the former stage

10 and transferring to a defect detection portion on the subsequent stage.

5. An image display device as set forth in claim 3, wherein said defect detection portion measures a

15 distribution of said voltages between terminals by detecting a defect for a plurality of times while successively changing said reference voltage by predetermined steps, and judges a light-emitting diode having a voltage between terminals positioned being away

20 from an end on the low voltage side in said distribution of voltages between terminals as a short-circuited defect or a defect with a high probability of becoming short-circuited.

25 6. An image display device as set forth in claim

3, wherein said defect detection portion measures a distribution of said voltages between terminals by performing defect detection for said plurality of times while successively changing said reference voltage by 5 predetermined steps, and judges a light-emitting diode having a voltage between terminals positioned being away from an end of the high voltage side in said distribution of voltages between terminals as an open defect or a defect with a high probability of becoming open.

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7. An image display device, comprising:  
a plurality of light-emitting diodes arranged by a predetermined arrangement on an image display face;  
a voltage detection portion for applying a 15 constant current to said plurality of light-emitting diodes in accordance with an input of a signal indicating a defect detection mode, and detecting voltages between terminals of light-emitting diodes arising when the constant current flows there through; and  
20 a defect detection portion for electrically detecting a defect from said plurality of light-emitting diodes by obtaining an isolated point being away from a distribution of said voltages between terminals based on a detection result of said voltage detection portion.

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8. A drive circuit device for driving a predetermined number of light-emitting diodes, comprising a voltage detection portion for applying a constant current to said predetermined number of light-emitting diodes in an off region at a forward voltage or less in accordance with an input of a signal indicating a defect detection mode, and outputting data on voltages between terminals for electrically detecting a defect from said plurality of light-emitting diodes from a difference of voltages between terminals of light-emitting diodes arising when the constant current flows there through.

9. A drive circuit device as set forth in claim 8, wherein said voltage detection portion comprises a current source connected in series with said light-emitting diodes; and a predetermined number of comparators for comparing a voltage of one terminal of a light emitting diode changing in proportional to said voltages between terminals as a result that said constant current flows in said current source with an input reference voltage.

10. A drive circuit device as set forth in claim 9, further comprising:

a logic calculation unit for executing logic calculation on outputs of said predetermined number of comparators and outputting a result of the logic calculation as binary data indicating an existence of a 5 particularity with a probability of being said defect; and

a transfer register for adding said binary data output from said logic calculation unit to data to be input and outputting.

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11. A defect detection method of a light-emitting diode for detecting a defect from a plurality of light-emitting diodes, including:

a first step of applying a constant current 15 to said plurality of light-emitting diodes in an off region at a forward voltage or less and comparing a voltage of one terminal changing in proportional to a voltage between terminals of a light-emitting diode arising when the constant current flows there through 20 with a reference voltage for each light-emitting diode;

a second step of repeating said first step for a plurality of times while changing said reference voltage; and

a third step of electrically specifying a 25 defect from said plurality of light-emitting diodes based

on results of said comparison for a plurality of times.

12. A defect detection method of a light-emitting diode as set forth in claim 11, wherein

5                 in said first and second steps, a distribution of said voltages between terminals is output by performing said comparison for a plurality of times while successively changing said reference voltage by predetermined steps; and

10                 in said third step, a light-emitting diode having a voltage between terminals at a position being away from an end on the low voltage side in said distribution of voltages between terminals is judged as a short-circuited defect or a defect with a high  
15 probability of becoming short-circuited.

13. A defect detection method of a light-emitting diode as set forth in claim 11, wherein

20                 in said first and second steps, a distribution of said voltages between terminals is output by performing said comparison for a plurality of times while successively changing said reference voltage by predetermined steps; and

25                 in said third step, a light-emitting diode having a voltage between terminals at a position being

away from an end on the high voltage side in said distribution of voltages between terminals is judged as an open defect or a defect with a high probability of becoming open.